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AUTHOR Perlman, Carole L.; And Others
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ABSTRACT

The various commercially available materials used to teach students test-taking skills offer contradictory advice on the issue of whether reading passages on standardized tests should be read before or after the corresponding test items. This study examined the effects on reading comprehension scores of training 606 urban fourth graders to use one of the following test-taking strategies: (1) read the questions and answer choices before reading the associated passage; (2) read only the questions before reading the passage; and (3) read the passage before reading the questions. Each student was given two 45-minute training sessions and one homework assignment in test-taking strategies. No significant treatment effects were found, although it appeared that while reading the questions (and possibly the answers) first can be beneficial to low achievers; the same does not appear to be the case for students who are more proficient readers. For the latter group, the lowest average gains were observed in the group that was asked to read the questions and answers before reading the associated passage. Seven data tables and two graphs are provided. (Author/TJH)

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HOW DISTRACTING ARE THE DISTRACTORS? A COMPARISON OF THREE TEST-TAKING STRATEGIES

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Carole L. Perlman
Jeanne B. Borger
Cynthia J. Gonzalez-Latin
Nancy I. Hiestand
Linda K. Junker
Margarita R. Rosa

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No significant treatment effects were found, although it appeared that while reading the questions (and possibly the answers) first can be beneficial to lower-achieving students, the same does not appear to be true for students who are more proficient readers. For that group, the lowest average gains were observed in the group that was asked to read the questions and answers first.

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Jeanne B. Borger
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Chicago Public Schools

Abstract

The various commercially available materials used to teach students test taking skill offer students contradictory advice on the issue of whether reading passages should be read before or after the corresponding test items. This study examines the effects on reading comprehension scores of training 606 urban fourth grade students to (1) read the questions and answer choices before reading the associated passage; (2) read only the questions first; or (3) read the passage first. No treatment effects were found.

A paper presented at the Annual Meeting of the National Council on Measurement in Education, San Francisco, March, 1989

Introduction

"The directions tell us to read the passage first. But we'll work through the example in a different way. We're going to look at the question first and then look at the passage...."

The above quotation comes from a commercial test preparation booklet (Random House Scoring High) used in many elementary schools to increase students' reading comprehension test scores. This publisher and others advocate reading test questions prior to reading the passage when taking multiple-choice comprehension tests. Some packages advocate reading both the questions and the answer choices first, while others suggest that students read only the questions first. Many authors of test preparation packages, however, do not agree. In fact, virtually all standardized test directions advise examinees to first read the passage and then answer the questions. One of the reasons given in support of this position is that reading the question first is only helpful in answering factual questions and is an obstacle in responding to questions that involve making inferences.

In Becoming a Nation of Readers: Implications for Teachers, provision for appropriate background activities to increase reading comprehension are stressed as a necessary and often-missing component of reading instruction. "(These activities) help students focus their attention on the important aspects of their reading." Questions that highlight the passage theme are suggested for these prereading activities (U. S. Department of Education, OERI, 1986).

A review of the literature on advance organizers and adjunct questioning revealed very few studies that were done with elementary school students and none which specifically examined the effect on reading comprehension scores of reading the question or the passage first. Instead these techniques have been studied as they impact on classroom instruction and learning. The research findings do indicate, however, that when questions about the content of a text are posed, either before or within a passage, readers recall more of the content than when no questions are asked (Sundbye, 1987, p. 85). There seem to be mitigating circumstances affecting their usefulness. In general, the use of prepassage or before adjunct questions increase students' performance on the same or similar questions presented after reading the material (Anderson & Biddle, 1975, p. 91; Andre, 1987, p. 81). Differential effects have also been observed for lower-level and higher-order questions and for learners of differing abilities (Anderson & Biddle, 1975; Andre, 1987; Risko & Alvarez, 1986; and Wilhite, 1984).

In the area of test-taking skills, Mehrens and Kaminski (1988) point out that (1) there has been little research on the efficacy of commercial test preparation packages and that (2) research on testwiseness instruction has been inconclusive. Perlman et al. (1988) found no overall differences in reading comprehension scores between read-the-question-first and read-the-passage-first conditions, although lower ability students seemed to do a little better than high ability students on generalization items if

they read the questions first. One limitation of that study was that there was no way to make sure that the students were reading only the questions first rather than the questions and the answer choices. It might well be that reading the questions and answer choices is less effective than reading only the question, since the extra reading takes time and may provide students with incorrect cues, especially for items requiring inference and generalization skills.

Purpose

Given the pressure to increase students' reading comprehension scores, the amount of time and money invested in testwiseness materials, the conflicting directions taught in test preparation packages, and the scarcity of research in this area, this study is intended to determine the usefulness of before adjunct questions with standardized multiple-choice tests. This study will examine the relative effectiveness of each practice (reading the question first, reading the question and answer choices first, or reading the passage first) for increasing students' reading comprehension scores.

Subjects

The subjects were 606 fourth grade students attending a total of 12 urban schools. The sample of schools was stratified according to prior reading achievement test scores and two classrooms in each school took part in the study. Within each school with heterogenous grouping, one classroom randomly assigned to each of two of the three treatment groups. In those schools with ability grouping, counterbalancing was done among treatment groups. A total of eight classrooms received each of the three experimental treatments.

Method

Each student was given two 45-minute training sessions and one homework assignment in test-taking strategies. The lessons focused on teaching students to looks for key words in questions and, depending on treatment group, advising students to (1) read test questions and answer choices before reading the associated passage, (2) read test questions only before reading the associated passage, or (3) read the passage first. The lessons were similar to those found in commercially available test preparation packages. After the first lesson, the students were given a homework assignment that involved practicing the strategies that they were taught. The next day, the experimenter returned, reviewed the homework assignment, and presented a second lesson. On the next day, the students were administered the Level 9 Reading Comprehension subtest of Form 8 of the Iowa Tests of Basic Skills (students had previously taken either Level 8 or Level 9 of the ITBS Form 7 during citywide testing that took place about seven months before the study was conducted). The lessons were taught by teacher certificated members of the school system's research department, but the students' teacher remained in the classroom during each lesson. The same researcher worked with both classrooms in a given school on the same day. Experimenters and treatment conditions were counterbalanced.

Results

An analysis of covariance was performed using the SAS general linear models procedure. Means and standard deviations for the independent variable (ITBS Form 8 Reading Comprehension grade-equivalent) and covariate (ITBS Form 7 Reading Comprehension grade-equivalent) are given in Table 1. Since some of the analyses that follow deal with changes in performance on specific subskills, the assessment of which requires that students take the same level pretest and posttest, means and standard deviations are given both for the entire sample, which includes students whose pretest was either Level 8

Insert Table 1 about here

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or Level 9 and for a slightly restricted sample who took the Level 9 pretest.

Results of the analysis of covariance for the entire sample are given in Table 2 and for the restricted sample (those with Level 9 pretests) in Table 3. In neither case was the ANCOVA assumption of homogeneity of within-group regression slopes met. Since the ANCOVA assumptions could not be met,

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Insert Tables 2 and 3 about here

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the entire group of students was divided into thirds based on ITBS pretest score and this was used as a blocking factor. Results of the ANOVA on the treatment by pretest group blocked design are given in Table 4. There were no significant treatment effects. It should be noted that interactions were not included in the analysis because of the correlation between pretest group and posttest score.

Insert Table 4 about here

To gain further insight into the results, pretest-to-posttest gains were calculated for low, middle, and high pretest students in each of the three treatment groups. The results are shown in Figures 1 and 2 for the

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Insert Figures 1 and 2 about here

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entire group and for the group that was pretested with the Level 9 ITBS. As one might expect (given that gain scores are generally negatively correlated with pretest score), the largest average gains were obtained by the students who scored lowest on the pretest. For this group, the best results were obtained by the students in the questions first and questions and answers first groups. This relationship did not hold true for the students with higher pretest scores; for them, the *lowest* average gains were observed in the read the questions and answers first treatment group.

ITBS Reading Comprehension items are divided by the publisher into three categories: facts (literal meaning, including description, categorization, time and sequence, and contextual meaning), inferences (cause and effect, drawing conclusions, traits, feelings, and motives), and generalizations (main idea, organization, application, author's purpose). In order to examine the possible differential effects of the three test-taking strategies on the various types of items included on the ITBS, exploratory analyses were performed on those Ss who took the Level 9 pretest and posttest. The results of the analyses of covariance are given in Tables 5-7. No significant treatment effects for percent of fact, inference, or

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Insert Tables 5-7 about here

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generalization items, nor were there any aptitude-treatment interactions

Discussion

The results indicate no significant differences in the effectiveness of different testwiseness strategies, but there might be some relationship between students' initial degree of reading proficiency and the effectiveness of various testwiseness strategies. This is somewhat consistent with the results found by Perlman et al. (1988). It appears that while reading the questions (and possibly the answers) first can be beneficial to lower-achieving students, the same does not appear to be true for students who are more proficient readers. Perhaps the weaker readers need the cognitive structure provided by the questions. Or perhaps reading the questions and answers first encourage better readers to not read the passage as carefully as they otherwise might have or to look for keywords in the questions that might not be helpful in determining the correct answer. Another consideration is that some of these students had in previous years received some testwiseness instruction (this factor was impossible for us to control, since it varies so much from school to school and even from

classroom to classroom within the same school). Perhaps the students with higher pretest scores have somehow reached a level of performance that cannot be improved upon by simply giving them additional instruction in test-taking skills.

It is not clear whether the same results would have been obtained using a lengthier test preparation program taught by the students' own teacher. It also might not be appropriate to generalize these results to other grade and ability levels.

Considerable time and money is spent on teaching students test-taking skills, although it is not firmly established what practices, if any, are really helpful. Much more definitive results would be possible if it is possible to find a school system that is agreeable to randomized experimentation in this area.

TABLE 1

Unadjusted Mean Scores and Standard Deviations
for Students Reading Questions First and Passage First

	Passage First					Questions First					Questions and Answers First				
		Pretest		Posttest			Pretest		Posttest			Pretest		Posttest	
	N	Mean	SD	Mean	SD	N	Mean	SD	Mean	SD	N	Mean	SD	Mean	SD
Grade-equiv. scores															
Level 9 only	185	3.42	0.89	3.53	1.00	195	3.95	0.98	4.01	1.03	195	3.79	1.01	3.71	0.96
Level 8 & 9	200	3.35	0.90	3.48	1.00	200	3.91	1.00	3.98	1.04	206	3.73	1.05	3.66	0.97
Percent correct (Level 9 only)															
Facts	185	51.7	19.1	64.8	21.7	195	61.8	20.3	73.6	19.5	195	58.3	20.7	68.8	19.2
Inference	185	51.0	16.4	51.8	19.6	195	57.9	17.2	61.8	20.3	195	56.1	18.1	55.8	20.4
Generalizations	185	41.6	21.8	59.8	26.1	195	54.3	21.2	68.9	24.0	195	52.4	23.9	65.3	23.9

TABLE 2

Analysis of Covariance Summary Table

Group: Level 8 and Level 9 Pretest

Dependent variable: Reading Grade Equivalent Score

Source	SS	df	MS	F	p
treatment		Assumptions not met, (see below).			
error					

The correlation between the dependent variable and the covariate is .73 (overall).

An F-test of the null hypothesis of homogeneity of within-group regression slopes was significant ($F_{2,602} = 3.54, p<.05$)

The correlation between the independent variable and the covariate was .74 for the passage first treatment.

The correlation between the independent variable and the covariate was .72 for the questions first treatment.

The correlation between the independent variable and the covariate was .70 for the questions and answers first treatment.

TABLE 3

Analysis of Covariance Summary Table

Group: Level 9 Pretest Only

Dependent variable: Reading Grade Equivalent Score

Source	SS	df	MS	F	p
treatment		Assumptions not met, (see below).			
error					

The correlation between the dependent variable and the covariate is .72.

An F-test of the null hypothesis of homogeneity of within-group regression slopes was significant ($F_{2,569} = 3.51$, $p<.05$)

The correlation between the independent variable and the covariate was .75 for the passage first treatment.

The correlation between the independent variable and the covariate was .72 for the questions first treatment.

The correlation between the independent variable and the covariate was .68 for the questions and answers first treatment.

Table 4
ANOVA Summary Table
Group: Level 9 Pretest Only
Dependent Variable: Reading Grade Equivalent Score

Source	SS	df	MS	F	p
Model	258.10	4	64.52	110.69	.0001
High pretest	229.36	1	229.36	393.29	.0001
Medium pretest	37.33	1	37.33	24.03	.0001
Questions first	0.60	1	0.60	1.03	.3103
Quest. & ans. first	1.24	1	1.24	2.12	.1458
Error	332.28	570	0.58		
Total	590.37	574			

Tests of Regression Weights

Parameter	Estimate	Std. Error	t	p
Intercept	2.98	0.07	43.05	.0001
High pretest	1.63	0.08	19.83	.0001
Medium pretest	0.63	0.08	8.00	.0001
Questions first	0.08	0.08	1.02	.3103
Questions and answers first	-0.12	0.08	-1.46	.1458

TABLE 5

Analysis of Covariance Summary Table

Group: Level 9 Pretest Only

Dependent variable: % Correct on Fact Item

Source	SS	df	MS	F	p
treatment	.0728	2	.0364	1.57	NS
error	13.2339	571	.0232		

The correlation between the dependent variable and the covariate was .67.

An F-test of the null hypothesis of homogeneity of within-group regression slopes was not significant ($F_{2,569} = 1.99$, NS)

TABLE 6

Analysis of Covariance Summary Table

Group: Level 9 Pretest Only

Dependent variable: % Correct on Inference Items

Source	SS	df	MS	F	p
treatment	.0562	2	.0281	.867	NS
error	18.5154	571	.0324		

The correlation between the dependent variable and the covariate was .46.

An F-test of the null hypothesis of homogeneity of within-group regression slopes was not significant ($F_{2,569} = .03$, NS)

TABLE 7

Analysis of Covariance Summary Table

Group: Level 9 Pretest Only

Dependent variable: % Correct on Generalization Items

Source	SS	df	MS	F	p
treatment	.2283	2	.1141	2.32	NS
error	28.1085	571	.0492		

The correlation between the dependent variable and the covariate is .46.

An F-test of the null hypothesis of homogeneity of within-group regression slopes was not significant ($F_{2,569} = 2.47$, NS)

Figure 1

Grade-Equivalent Gains by Treatment Group and Pretest Achievement (Test Levels 8 & 9)

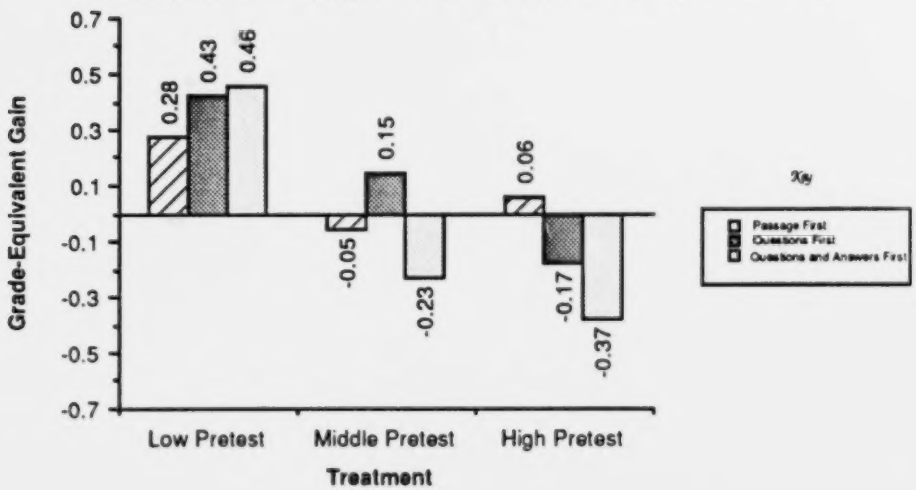
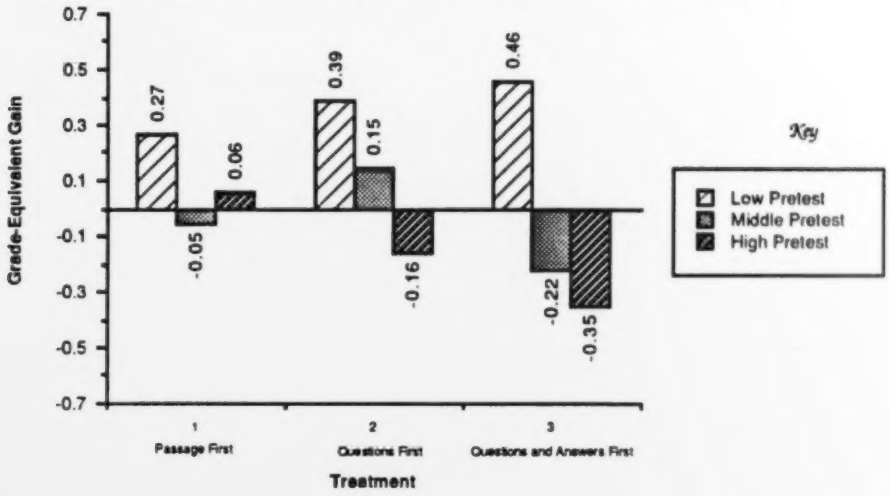


Figure 2

Grade-Equivalent Gains by Treatment Group and Pretest Achievement (Test Level 9 only)



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